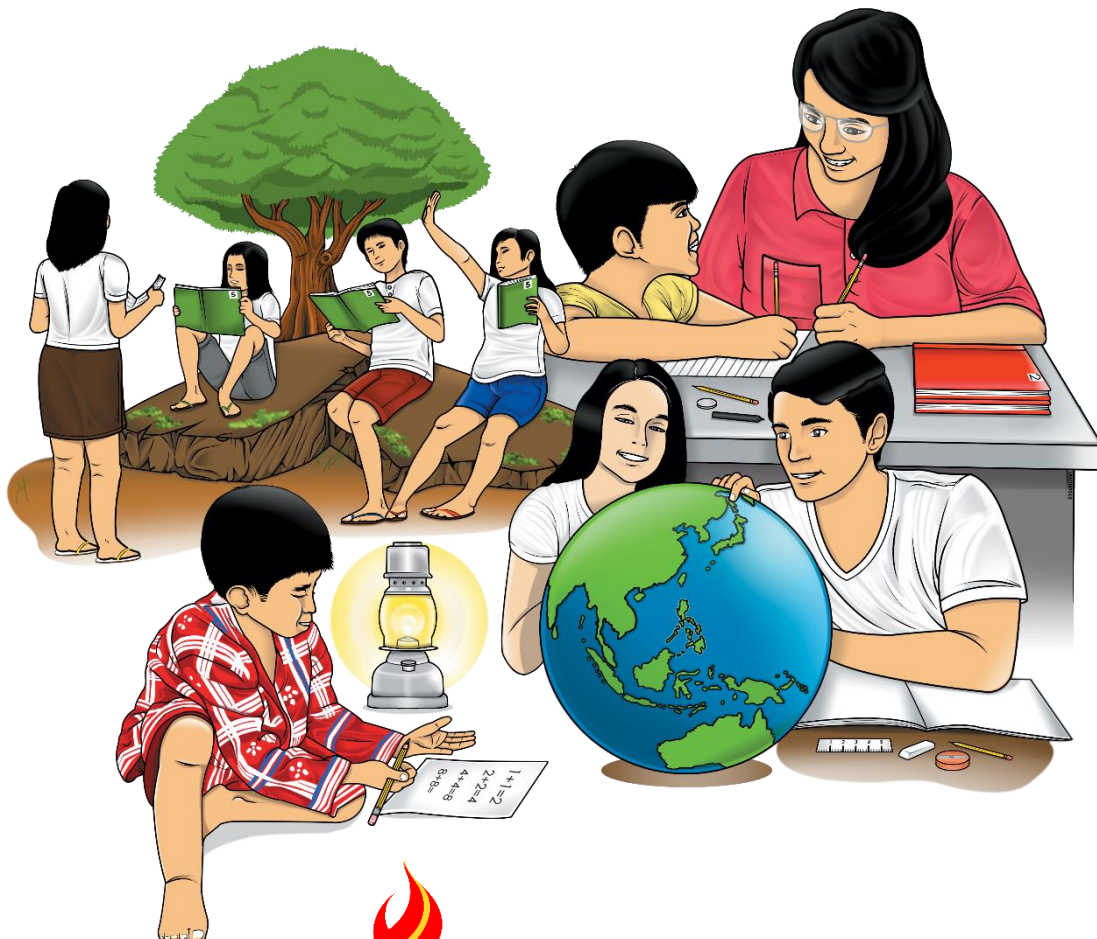


# Disaster Readiness and Risk Reduction

## Quarter 1 – Module 14: Interpret Earthquake Hazard Map



**Disaster Readiness and Risk Reduction  
Alternative Delivery Mode  
Quarter 1 – Module 14: Interpret Earthquake Hazard Map  
First Edition, 2021**

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**Disaster Readiness  
and Risk Reduction**  
**Quarter 1 – Module 14:**  
**Interpret Earthquake  
Hazard Map**

## **Introductory Message**

This Self-Learning Module (SLM) is prepared so that you, our dear learners, can continue your studies and learn while at home. Activities, questions, directions, exercises, and discussions are carefully stated for you to understand each lesson.

Each SLM is composed of different parts. Each part shall guide you step-by-step as you discover and understand the lesson prepared for you.

Pre-tests are provided to measure your prior knowledge on lessons in each SLM. This will tell you if you need to proceed on completing this module or if you need to ask your facilitator or your teacher's assistance for better understanding of the lesson. At the end of each module, you need to answer the post-test to self-check your learning. Answer keys are provided for each activity and test. We trust that you will be honest in using these.

In addition to the material in the main text, Notes to the Teacher are also provided to our facilitators and parents for strategies and reminders on how they can best help you on your home-based learning.

Please use this module with care. Do not put unnecessary marks on any part of this SLM. Use a separate sheet of paper in answering the exercises and tests. And read the instructions carefully before performing each task.

If you have any questions in using this SLM or any difficulty in answering the tasks in this module, do not hesitate to consult your teacher or facilitator.

Thank you.



## ***What I Need to Know***

In this module, the learner will be able to identify different earthquake hazards at home. This will further teach the learner how to sketch an earthquake map and be able to interpret it according to its degree of damage in order to make the whole family safe and free from harm during earthquake. To lessen if not to avoid danger during disasters, the learner is expected to become a keen observant by knowing how to identify different earthquake hazards present at home. Aside from having a skill in identifying earthquake hazards at home, this module will also help the learner and other family members to propose appropriate actions for disaster readiness.

In this module, the learner will be able to determine what is earthquake hazard map and its crucial role upon pertaining to the assessment of risk that a particular place could take. This will further teach the learner on how to manage or raise peoples' anticipation and readiness regarding the hazard and risk that the place may take. To lessen the counts of possible casualties, the learner is expected to become knowledgeable of interpreting earthquake hazard maps and resilient by giving insights and ideas where to go and find a safe and secured facilities and shelters in doing the evacuation procedures to reduce the dangers of hazards that supposedly present at home and in the community. This module will also help the learner to identify, create earthquake hazard map and become well-familiarize of preventive measures such as evacuation procedures and decision making in terms of location where to evacuate in case of hazard and risk occurrence.

The module is consist one lesson only.

- Interpret Earthquake Hazard Maps.

After going through this module, you are expected to:

1. identify different earthquake hazards at home;
2. appreciate a hazard map by creating one within the vicinity of the house; and
3. interpret an earthquake hazard map according to the degree of damage.



## ***What I Know***

Choose the letter of the best answer. Write the chosen letter on a separate sheet of paper.

1. Which of the following can you get in making an earthquake hazard map?
  - a. evacuation
  - b. information
  - c. mitigation
  - d. transformation
2. In a hazard map color, what does brown mean?
  - a. very small probability of damage
  - b. could experience very strong shaking
  - c. capable of producing the most intense shaking
  - d. could experience shaking of moderate intensity
3. Where will you keep your family hazard map?
  - a. inside the cabinet
  - b. inside a plastic bottle
  - c. a place where children cannot reach it
  - d. a place that is accessible to every member of the family
4. Which of the following characteristics can be considered in preparing a hazard map?
  - a. The map can only be understood by the parents.
  - b. The map can only be understood by the barangay officials.
  - c. The map must be easy to use and understand by the members of the family.
  - d. all of the above
5. In an earthquake map, moderate intensity is represented by what color?
  - a. Brown
  - b. Gray
  - c. Red
  - d. Yellow
6. Which of the following is not a material or tool which provides you the necessary information and guide in procurement of peoples understanding, awareness and mitigation of the risks from natural hazards?
  - a. hearsay
  - b. map
  - c. news paper
  - d. television
7. In an earthquake map, which of the following color describe the strongest shaking?
  - a. Brown
  - b. Gray
  - c. Red
  - d. White

8. Building design and construction professionals use SDC's specified in building codes to determine the level of seismic resistance required for new buildings. What is SDC stance for?
- a. Seismic Design Categories
  - b. Seismic Denoted Categories
  - c. Seismic Designated Categories
  - d. None of the above
9. Which of the following is not considered in a hazard mapping?
- a. potential hazard
  - b. safety route
  - c. valuable materials
  - d. all of the above
10. Why is hazard map important?
- a. it will lead you to a safety route
  - b. it will lead you to the evacuation center
  - c. it will help the whole family to evacuate easily
  - d. all of the above
11. Which part of the map shows the proportion to real life?
- a. color
  - b. grid reference
  - c. scale
  - d. symbol
12. Which of the following parts of the map will give you direction?
- a. colour
  - b. compass rose
  - c. grid reference
  - d. scale
13. Which of the following are intersecting lines to help locate specific place of the map?
- a. compass rose
  - b. grid reference
  - c. scale
  - d. title
14. Which part of the map highlights different information to help interpret maps?
- a. colour
  - b. compass rose
  - c. scale
  - d. symbol
15. These are pictures used in the map.
- a. colour
  - b. grid reference
  - c. scale
  - d. symbol

# Lesson 1

# Interpret Earthquake Hazard Map

This lesson explains the importance of having a knowledge of interpreting an earthquake hazard map which is very essential not only in the family but also in the community. It will also help the learner on how to create a family hazard map which will they use during evacuation.

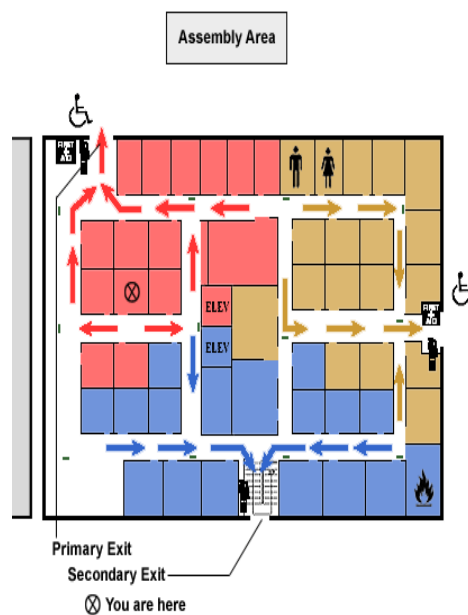


## What's In

Activity 1. Compare and contrast the two images and answer the given questions below.



Pic. 1



Pic. 2

2021. Edrawsoft.com. 2021. <https://www.edrawsoft.com/templates/images/location-map.png>.

2020. Pinimg.Com. 2020. <https://i.pinimg.com/originals/dd/d3/3d/ddd33d32c01f5f828d368acf0054a2ed.jpg>.

1. What picture is best represented by a family earthquake hazard map?

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2. Why did you consider that picture as a hazard map?

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3. Describe the things that you can see in that hazard map.

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4. Why are those arrows important? What does the color of the arrows indicate?

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## ***What's New***

1. Do you have a family hazard map at home?

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2. Why is family hazard map important?

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3. Do you know how to interpret a hazard map? How do you interpret your family hazard map?

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4. What are the things you need to consider in interpreting your family hazard map in order to become more effective?

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## ***What is It***

### **What is a Hazard Map?**

A **hazard map** is a map that highlights areas that are affected by or are vulnerable to a particular hazard. They are typically created for natural hazards, such as earthquakes, volcanoes, landslides, flooding and tsunamis. Hazard maps help prevent serious damage and deaths.

(“Hazard Map.” 2020. Wikipedia. October 29, 2020. [https://en.wikipedia.org/wiki/Hazard\\_map](https://en.wikipedia.org/wiki/Hazard_map).)

Hazard maps provide **important information to help people understand the risks of natural hazards** and to help mitigate disasters. Hazard maps indicate the extent of expected risk areas, and can be combined with disaster management information such as evacuation sites, evacuation routes, and so forth. (“KNOWLEDGE NOTE 5-1 CLUSTER 5: Hazard and Risk Information and Decision Making Risk Assessment and Hazard Mapping.” n.d. [https://www.preventionweb.net/files/29163\\_drmkn511.pdf](https://www.preventionweb.net/files/29163_drmkn511.pdf).)

A Seismic Design Categories will help us in interpreting an earthquake map. The following table describes the hazard level associated with each SDC and the associated levels of shaking.

SDC	Map Color	Earthquake Hazard	Potential effects of Shaking
A	White	Very small probability of experiencing damaging earthquake effects	
B	Gray	Could experience shaking of moderate intensity	Moderate shaking-Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight
C	Yellow	Could experience strong shaking	Strong shaking-Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built structures.
DO	Light Brown	Could experience very strong shaking (the darker the color, the stronger the shaking)	Very strong shaking-Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures.
D1	Darker Brown		
D2	Darkest Brown		
E	Red	Near major active faults capable of producing the most intense shaking	Strongest shaking-Damage considerable in specially designed structures; frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.

		Shaking intense enough to completely destroy buildings.
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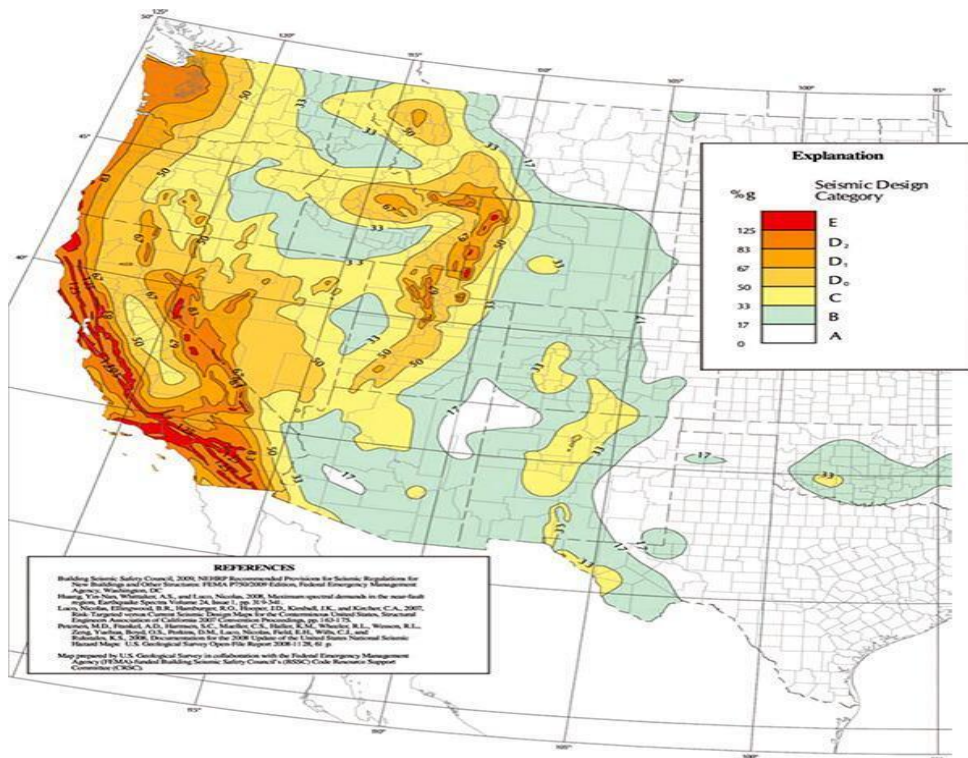
2021. Coursehero.com. 2021. <https://www.coursehero.com/qa/attachment/19375466/>.

## How to Read and Interpret an Earthquake Hazard Map?

The colors in the maps denote “seismic design categories” (SDCs), which reflect the likelihood of experiencing earthquake shaking of various intensities.

The maps displayed below show how earthquake hazards vary across the United States. Hazards are measured as the likelihood of experiencing earthquake shaking of various intensities.

2021. Fema.gov. 2021. [https://www.fema.gov/sites/default/files/2020-07/fema\\_hazard\\_maps\\_western-map\\_graphic.jpg](https://www.fema.gov/sites/default/files/2020-07/fema_hazard_maps_western-map_graphic.jpg). 2021. Fema.gov. 2021. [https://www.fema.gov/sites/default/files/2020-07/fema\\_hazard\\_maps\\_western-map\\_graphic.jpg](https://www.fema.gov/sites/default/files/2020-07/fema_hazard_maps_western-map_graphic.jpg).



2021. Fema.gov. 2021. [https://www.fema.gov/sites/default/files/2020-07/fema\\_hazard\\_maps\\_western-map\\_graphic.jpg](https://www.fema.gov/sites/default/files/2020-07/fema_hazard_maps_western-map_graphic.jpg).

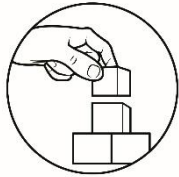
Color white in the map indicates a very small probability of experiencing damaging earthquake effects (low risk) while colored red in the map which is near major active faults capable of producing the most intense shaking (high risk) as indicated in the Seismic Design Categories.

On the other hand, there are also seven important components of a map. These components will also help you read and interpret a map in the future.

1. Compass rose - This will give you the proper direction. This is also called it “orientation.”
2. Title - It tells what the map is about.
3. Symbols - These are pictures instead of symbols.
4. Legend or Key - It explains the meaning of symbols and colour.
5. Colour - It highlights the important information to help interpret maps.
6. Scale - It shows the proportion of map to real life.

7. Grid Reference - These are intersecting lines to help locate specific places on the map. In some maps, it is also called “border.”

<https://image.slidesharecdn.com/components-of-a-map-1-638.jpg?cb=1503981718>



## What's More

### Activity 1: Name Me!

Direction: Give 10 establishments where you can see a hazard map. Write your answers in your DRRR notebook.

- |          |           |
|----------|-----------|
| 1. _____ | 6. _____  |
| 2. _____ | 7. _____  |
| 3. _____ | 8. _____  |
| 4. _____ | 9. _____  |
| 5. _____ | 10. _____ |

### Activity 2: Give Me A Map!

In your DRRR notebook, sketch your family evacuation map going to the evacuation area. Indicate in your map the exact location of potential hazards at home and on your way to evacuation site. The map should be easy to follow. Color the different potential hazard based from the Seismic Design Categories. White is the lowest risk and Red is the highest risk .

### Rubrics

Work will be graded based on the rubrics.

Category	4	3	2	1
Comprehensiveness of the map	The map shows 8-10 potential hazards correctly and potential disasters were described	The map shows 5-7 potential hazards correctly and potential disasters were described	The map shows 1-4 potential hazards only	The map doesn't show 8-10 potential hazards
	The map shows all safe spaces and the path going out of the house	The map shows most safe spaces	The map shows 1-2 safe spaces	Does not show safe space

### Activity 3: Interpret Me!

Below is a part of the West Valley Fault map. Assess your geographical location whether you are living or residing near the Faultline. Using the Seismic Design Category (SDC), answer the questions below the map.



2021. Viamichelin.com. 2021. <https://map.viamichelin.com/map/carte?map=viamichelin>

1. What SDC category do you belong? Your answer may vary from A to E category depending on your geographical location. Justify your answer.

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2. If you are living or residing near the Faultline, what preventive measures you and your family will do to avoid further damage of properties or loss of lives?

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### Activity 4. Guide Me!

Using your family evacuation map, answer the following:

1. What is the approximate distance in meters from your house to the evacuation area?

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2. If you start to travel from your house to the evacuation site, how many minutes will you consume before reaching the evacuation site?

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3. Using a compass or GPS, what direction do you follow in going to the evacuation site?

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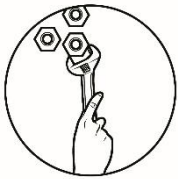
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## ***What I Have Learned***

1. I learned that having a knowledge of interpreting a family hazard map is \_\_\_\_\_ because \_\_\_\_\_.

2. I further learned that interpreting a family hazard map can help me and my family in \_\_\_\_\_.



## ***What I Can Do***

You look at again the family hazard map that you sketched. Then answer the following questions.

1. If a strong earthquake will strike your place, how do you and your family use your family evacuation map?

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2. What can you and your family do to evacuate immediately using your family evacuation map?

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## ***Assessment***

Choose the letter of the best answer. Write the chosen letter on a separate sheet of paper.

1. In a hazard map color, what does brown mean?
  - a. very small probability of damage
  - b. could experience very strong shaking
  - c. capable of producing the most intense shaking
  - d. could experience shaking of moderate intensity

2. In an earthquake map, moderate intensity is represented by what color?
  - a. Brown
  - b. Gray
  - c. Red
  - d. Yellow
3. Where will you keep your family hazard map?
  - a. inside the cabinet
  - b. inside a plastic bottle
  - c. a place where children cannot reach it
  - d. a place that is accessible to every member of the family
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5. Which of the following characteristics can be considered in preparing a hazard map?
  - a. The map can only be understood by the parents.
  - b. The map can only be understood by the barangay officials.
  - c. The map must be easy to use and understand by the members of the family.
  - d. all of the above
6. Which of the following is not a material or tool which provides you the necessary information and guide in procurement of peoples understanding, awareness and mitigation of the risks from natural hazards?
  - a. hearsay
  - b. map
  - c. news paper
  - d. television
7. Which of the following is not considered in a hazard mapping?
  - a. potential hazard
  - b. safety route
  - c. valuable materials
  - d. all of the above
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  - a. color
  - b. grid reference
  - c. scale
  - d. symbol
11. These are pictures used in the map.
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12. Which of the following parts of the map will give you direction?
  - a. colour
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  - d. scale
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  - c. scale
  - d. title
14. Which part of the map highlights different information to help interpret maps?
  - a. colour
  - b. compass rose
  - c. scale
  - d. symbol

15. Why is hazard map important?
- it will lead you to a safety route
  - It will lead you to the evacuation center
  - It will help the whole family to evacuate easily
  - all of the above



## ***Additional Activities***

Below is a CALABARZON map. Apply color in each province using the Seismic Design Categories (SDC) or the degree of shaking. Interpret each color you applied in each province.



“Redirect Notice.” 2021. Google.com. 2021. <https://www.google.com/url?>

1. Cavite

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2. Laguna

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3. Rizal

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4. Batangas:

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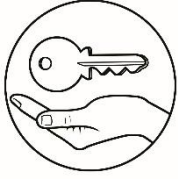
5. Laguna de Bay

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## ***Answer Key***

<p><b>Assessment</b></p> <p>1. A 2. B 3. D 4. B 5. C 6. A 7. C 8. C 9. A 10. C 11. D 12. B 13. B 14. A 15. D</p>		<p><b>What I know!</b></p> <p>1. B 2. A 3. D 4. C 5. B 6. A 7. B 8. B 9. C 10. D 11. C 12. B 13. B 14. A 15. D</p>
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## ***References***

“Philippine Earthquake Hazard Map - Google Search.” n.d. Www.Google.Com.

Accessed July 10, 2020.

[https://www.google.com/search?q=Philippine+earthquake+hazard+map&xsrf=ALeKk0078X7PN9EcEqH688AQMdYXbEKiOA:1591069483296&tbm=isch&source=iu&ictx=1&fir=\\_ECeDzlkY0iRYM%253A%2](https://www.google.com/search?q=Philippine+earthquake+hazard+map&xsrf=ALeKk0078X7PN9EcEqH688AQMdYXbEKiOA:1591069483296&tbm=isch&source=iu&ictx=1&fir=_ECeDzlkY0iRYM%253A%2).

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